

4.4 MUNICIPAL AND DOMESTIC WASTEWATER: TREATMENT, DISPOSAL, AND RECLAMATION

Municipal and domestic wastewater¹ discharges can cause chemical, bacteriological and toxic contamination to both ground and surface waters. Ground and/or surface water contamination can also occur from poor disposal practices, such as discharging wastes into unlined ponds, pits or sumps. Such waste discharges are regulated by the Regional Board or a designated agency with proper authority. Municipal wastewater, individual waste disposal systems, effluent limitations and policies under Regional Board authority are discussed below. Most of these requirements and policies are implemented through the Regional Board permitting process. However, some requirements ~~are may be implemented by local agencies. For example, under a Memorandum of Understanding with the Regional Board, the County Health Departments issue permits to install and operate individual waste disposal systems.~~ Methods used to determine compliance with limitations and requirements are further discussed in this Section.

Waste discharge prohibitions concerning sewage are listed in Section 4.1, "Waste Discharge Prohibitions." Effluent limitations and treatment policies concerning wastewater treatment and disposal are set forth below. Discussion of specific wastewater facilities in the Lahontan Region follows the policy statements.

Effluent Limitations

Effluent limitations for disposal of treated point source wastes to surface waters are developed for individual point sources and included in waste discharge requirements or NPDES permits. They are numeric and narrative limits placed on the quality and quantity of the waste discharge or effluent. Effluent limitations are based on water quality objectives for the area of effluent disposal and applicable state and federal policies and effluent limits. Numeric and narrative water quality objectives and policies are

¹ **Note:** "Municipal and domestic wastewater" is defined as sewage or a mixture of predominantly sewage and other waste from districts, municipalities, communities, hospitals, schools, and publicly or privately owned wastewater systems.

based on beneficial uses established for the receiving waters.

Treatment process selection is discussed in general for wastewater discharges and more specifically for two types of disposal: surface water disposal and land disposal. Waste discharge prohibitions related to treated point source wastes also determine methods of treatment and disposal. Prohibitions concerning wastewater are contained in the Waste Discharge Prohibitions section, above. Treatment policies, including pretreatment, unlined sewage ponds, constructed wetlands, package treatment plants and wastewater reclamation, are discussed under "Treatment Policies" below.

In the past, federal water quality control programs for surface water protection emphasized a "technology-based" approach to regulation of waste disposal. The current emphasis is on "water quality based controls." States have been directed to identify "Water Quality Limited Segments," which are surface water bodies that are not attaining water quality objectives or protection of beneficial uses and are not expected to do so even with technology-based controls. For these waters, states must conduct point and nonpoint source wasteload allocations, and establish Total Maximum Daily Loads (TMDLs) of pollutants which can be permitted from each discharger to ensure attainment and maintenance of water quality objectives and protection of beneficial uses. TMDLs are used, together with a margin of safety, to set effluent limitations in discharge permits. Additions to and deletions from the Lahontan Region's list of Water Quality Limited Segments are considered every two years as part of the water quality assessment process (Chapter 7). Priorities for developing TMDLs for listed waters are also updated through this process. Section 4.13 of this Basin Plan includes approved TMDLs for specific surface waters.

Because the Lahontan Region has many high quality water bodies where state and federal nondegradation policies and regulations apply, effluent limitations are set to prevent degradation of water quality. Special considerations in effluent limitations for particular treatment plants (such as the Tahoe-Truckee Sanitation Agency) are discussed in the "Facilities Discussion" below.

General Requirements

Discharge requirements are prescribed for each discharger on a case-by-case basis; however, in every case, industrial and municipal effluent discharged to waters of the Region shall contain essentially none of the following substances:

Chlorinated hydrocarbons

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Toxic substances
Harmful substances that may bioconcentrate or bioaccumulate
Excessive heat
Radioactive substances
Grease, oil, and phenolic compounds
Excessively acidic and basic substances
Heavy metals such as lead, copper, zinc, mercury, etc.
Other deleterious substances

Furthermore, any person who is discharging or proposes to discharge waste, other than into a community sewer system, must file a Report of Waste Discharge (RWD) with the Regional Board unless this requirement is waived by the Regional Board. Detailed lists of information needed in the Report of Waste Discharge can be obtained from Regional Board staff. Upon receipt of the RWD, the Regional Board, with information and comments received from state agencies and the public, will prescribe discharge requirements including any appropriate limitations on biological and mineral constituents, as well as toxic or other deleterious substances. Additionally, revised waste discharge reports may be required prior to additions of waste, changes in treatment methods, changes in disposal area or increases in effluent flow.

Discharge requirements will be established that are consistent with the water quality objectives for the receiving water (see Chapter 3 of this Plan), including wasteload allocations or Total Maximum Daily Loads (TMDLs) established for the discharge, the State Board's "non-degradation" policy, the federal anti-degradation and anti-backsliding regulations, and the principle of obtaining the optimum beneficial use of the Basin's water resources.

Land Disposal of Sewage Effluent

Land disposal of sewage effluent is exempt from the land disposal requirements contained in the California Code of Regulations, Title 23, Chapter 15 (see Solid and Liquid Waste Section). Some sewage-related discharges, such as sludge and septage may be regulated by Chapter 15. Land disposal of sewage effluent includes disposal to evaporation-percolation basins, irrigation of land, disposal to constructed or natural wetlands, drying ponds or beds for municipal effluent sludge, and disposal to lined evaporation ponds.

Principal factors affecting treatment process selection for land disposal are the nature of soils and ground waters in the disposal areas and, where irrigation is involved, the nature of crops (see Wastewater

Reclamation Policy). Wastewater characteristics of particular concern are total salt content, nitrate, boron, pathogenic organisms, and toxic chemicals. Where percolation alone is considered, the nature of underlying ground waters is of particular concern. Treatment processes should be tailored to insure that local ground waters are not degraded. U.S. Environmental Protection Agency (USEPA) guidelines for secondary treatment (based on the federal Clean Water Act, Section 301) do not apply to land disposal cases. However, municipal treatment facilities must provide effective solids removal and some soluble organics removal for percolation bed operations and for reduction of nuisance in wastewater effluent irrigation operations. Disinfection requirements are dictated by the disposal method. Oxidation ponds may be cost-effective in some remote locations and may be equivalent to secondary treatment. The exact constituents and limitations must be established on a case-by-case basis. Nitrate removal is required in some cases where percolating waste may impact beneficial uses of ground water due to increased nitrate levels. Percolation basins operated in alternating wet and dry cycles can provide significant nitrogen removal through nitrification/denitrification processes in the soil column. Finer textured soils are more effective in removing nitrogen than coarse soils. Monitoring in the immediate vicinity of the disposal site is required in either case. Where the need for nitrate removal is not clear, removal could be considered at a possible future stage depending on monitoring results.

The closed hydrologic systems of the Lahontan Region allow the accumulation of minerals in ground water. Therefore, discharge requirements for wastewater may generally specify a maximum limit for mineral constituents in order to meet the water quality objectives established for the receiving ground water. In areas where insufficient data preclude the establishment of objectives, and as an interim measure until such data are available, effluent limits may specify a reasonable incremental increase for constituents above the level contained in the underlying ground water. These limits may be superseded by more stringent requirements where necessary for effective water quality management of the receiving water. In all cases, ground waters of the Region are specified as a source of drinking water unless the Regional Board has granted an exemption in accordance with the Sources of Drinking Water Policy (see Chapter 6, Plans and Policies). Therefore, all effluent discharged to land must not adversely impact an underlying aquifer which is a designated drinking water supply.

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Surface Water Disposal of Sewage Effluent

The general purpose of sewage treatment is to provide a stable effluent that can be disposed of without hazard or actual damage to the environment, that will commingle with and remain a part of the usable water supply, and that will not impair the quality of the receiving water for present and probable future beneficial uses. Surface water disposal is prohibited in some watersheds; see "Treatment Policies." (Also see Section 4.1, Regionwide Prohibition No. 4.)

Primary factors governing treatment process selection for disposal to surface waters are federal and state effluent limits, state public health regulations, and water quality objectives for beneficial use protection. At a minimum, discharges of sewage to surface waters shall meet effluent limitations in accordance with the USEPA standards for secondary treatment as presently established for the particular method of treatment. The current USEPA standards for minimum level of effluent quality attainable by secondary treatment (40 CFR § 133.102) are as follows:

Constituent ²	30-Day Arithmetic Mean	7-Day Arithmetic Mean
20°C BOD ₅ (mg/L)	30	45
Suspended Solids (mg/L)	30	45

pH: The effluent values for pH shall remain within the limits of 6.0 to 9.0

In areas where there is no direct discharge to surface waters, but there is rapid percolation, conventional secondary treatment is currently adequate. USEPA guidelines for best practicable treatment would also apply in these cases. Where water contact recreational use is to be protected, the California Department of Health Services (DHS) requires coagulation, filtration, and disinfection providing a median coliform Most Probable Number (MPN) of 2.2/100 ml or less in receiving waters. Detoxification is required where fishery protection is a concern. Detoxification would include effluent limits for identified toxicants, pursuant to Section 307 of the Clean Water Act. Source control of specific toxicants may be necessary to comply with the Act. Acute

² **Note:** The arithmetic mean of the values for effluent samples collected for 20°C BOD₅ and Suspended Solids in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

and/or chronic biological toxicity testing is required to ensure compliance with all applicable state and federal toxicity standards. Additional effluent limitations and waste discharge prohibitions may be specified in accordance with appropriate plans or policies of the State or Regional Boards (see Chapter 6, Plans and Policies).

Septage and Sludge Disposal

Septage is generated from the use of holding tanks and septic tanks (see discussion of "Individual Wastewater Treatment Systems" later in this section). Sludge is the semi-solid material which settles out or is filtered out of sewage or water during the wastewater or drinking water treatment process. Septage and sludge may contain any substance that may be poured down a drain or flushed down a toilet. Metals, acids, alkalies, and pesticides may be present in small quantities. High levels of ammonia, coliforms, and BOD will almost certainly be found. Wastewater treatment sludge will also contain any substances used by the treatment plant to cause the solids to settle out of the liquid wastewater during the treatment process. Drinking water treatment sludge may have low levels of substances found in wastewater treatment sludge. Because of the concentrated nature of any percolate from sludge and septage, any percolate to ground or surface waters can seriously impact beneficial uses. Since municipal wastewater sludge is considered solid waste, disposal is regulated under Chapter 15. (See "Solid and Liquid Waste Disposal" section.)

Septage is generated from numerous sources including residential septic tanks, holding tanks for recreational vehicle waste dumping, marina and individual vessel holding tanks, and commercial and industrial septic tanks. Because of the various sources, the quality of septage is also highly variable. It is desirable to have septage pumped and transported to either lined evaporation ponds or a sewage treatment plant where treatment of septage can be accomplished rather than direct disposal to a lined impoundment. Treatment of such concentrated waste, however, poses a problem for many smaller or at-capacity wastewater treatment plants in the Region. Not all wastewater treatment plants in the Lahontan Region accept septage from waste haulers who pump out septic tanks and holding tanks. The Regional Board will encourage that local officials review all proposals for new holding tanks or septic tanks to ensure that adequate septage disposal capacity is available. If necessary, the Regional Board will consider making adequate septage disposal a condition of permitting new holding tanks or septic tanks. Proposals for new holding tanks or septic tanks which may be accepting industrial waste

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or chemical toilet wastes should be reviewed carefully by local agencies and Regional Board staff to ensure that proper treatment and final disposal of the septage generated can be accomplished without detriment to water quality. If septage is not commingled with wastewater for treatment at an approved wastewater treatment facility, septage must be placed in a Class II surface impoundment, under Chapter 15 regulations (see “Solid and Liquid Waste Disposal” section). This is a lined containment structure, preventing the septage from contacting either surface or ground water.

The Regional Board specifically prohibits the unauthorized discharge of waste, including from boats and marinas, to surface waters ~~of several hydrologic units. The Regional Board also prohibits the discharge of waste directly to many surface waters of the Region~~ (see “Waste Discharge Prohibitions”). Floating latrines are one possible way of reducing discharges of sewage from boats into lakes. Floating latrines will generally be of benefit, however, only for lakes that are so large that boaters in mid-lake find it inconvenient to return to shore to make use of on-shore facilities. Proposals for installation of floating latrines will be reviewed by the Regional Board on a case-by-case basis. Floating latrines should be vandalism-proof, and good maintenance agreements will be required. Boater surveys are recommended prior to installation, to verify that such facilities will actually be used by boaters. See Section 4.11, “Recreation” for a discussion of the impacts of boat fuel discharges.

Treatment Policies

Pretreatment Policy

It is the responsibility of the State and Regional Boards to implement and administer the federal Pretreatment Program for controlling the discharge of toxic and hazardous pollutants by industrial users into publicly-owned treatment works (POTWs) with capacity of 5 million gallons per day (mgd) or greater. The Pretreatment Program is administered through the National Pollutant Discharge Elimination System (NPDES). The Pretreatment Program is administered by the State through a Memorandum of Agreement (MOA) between the USEPA and the State Board. Regional Board responsibilities are summarized below.

- Enforce national pretreatment standards prohibiting discharges (40 CFR § 403.5)
- Enforce national categorical pretreatment standards (40 CFR, Subchapter N, Effluent Guidelines and Standards)

- Review, approve or deny POTW pretreatment programs (40 CFR § 403.8, 403.9 and 403.11)
- Require POTWs to develop and enforce local discharge limits [40 CFR § 403.5(c)]
- Oversee POTW pretreatment programs to ensure compliance with 40 CFR § 403.8, and with other pretreatment requirements in the POTW's waste discharge permits or NPDES permit
- Perform POTW audits, compliance inspections, and review of quarterly and annual reports to assure POTW compliance with pretreatment requirements
- Provide the State Board and USEPA, upon request, with copies of all notices received from POTWs that relate to new or changed introduction of pollutants to the POTW or other pertinent information
- Review and approve POTW requests for authority to modify categorical pretreatment standards to reflect removal of pollutants by a POTW (40 CFR § 403.7, 403.9 and 403.11)
- Apply all other pretreatment requirements as required by 40 CFR Part 403

Few municipal wastewater treatment plants in the Lahontan Region are large enough (greater than 5 mgd) to require pretreatment of commercial and industrial wastewater under the federal regulations. However, there is increasing concern for all wastewater facilities regarding the impacts of not only industrial, but also household chemicals on effluent quality.

Unlined Sewage Ponds

There are numerous small unlined sewage ponds throughout the Region that are believed to be a threat to ground water quality because they allow the percolation of inadequately treated sewage to underlying ground water. These facilities are owned by either private parties or small public entities that have very limited financial resources. There is typically no ground water monitoring associated with these small ponds, so their actual impact on ground water is unknown. To require that all of these facilities be immediately upgraded to where they produce a secondary level effluent would create, in most cases, a significant financial burden to the owners of the ponds. Such an approach may also result in upgraded facilities that are not needed to protect ground water quality. Although it can also be expensive, ground water monitoring at each of these

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facilities is needed to determine whether they are degrading the ground water. If it is determined that the discharge from an unlined pond is impacting ground water, action will be taken to require either elimination or improved treatment of the wastewater discharge. The requirement for upgrading treatment (or elimination of the discharge by placing it in a lined evaporation pond) should be made with provisions allowing for the improvements to be made within two years.

Recommended Control Actions to Address Unlined Sewage Ponds

1. Inventory all unlined ponds in the Region that are receiving sewage that has not received at least secondary-level treatment.
2. Prioritize the ponds by their threat to water quality, taking into account factors such as: (a) the volume of waste discharged, (b) the quality and existing beneficial uses of the receiving waters and (c) the likelihood of the sewage containing any industrial wastes.
3. Beginning with the highest priority facilities, revise waste discharge requirements to require the installation of at least three groundwater monitoring wells within two years.
4. If degradation of the ground water is detected at any time after the first two years of semi-annual ground water monitoring, waste discharge requirements will be revised to require that treatment of the discharge be upgraded to a secondary level within two years. If no degradation (either actual or predicted violations of water quality objectives) is detected, the discharge will be allowed to continue with ongoing sampling of the ground water monitoring wells.

An exemption to the groundwater monitoring well requirement may be obtained if the discharger can submit evidence that demonstrates to the satisfaction of the Regional Board's Executive Officer that the underlying groundwater will not be adversely impacted by any discharge from the pond.

Constructed Wetlands

The use of constructed wetlands as a method to provide final treatment and disposal for municipal wastewater continues to grow throughout the country and may be proposed for use in the Lahontan Region. Constructed wetlands are generally of two types: (1) free water surface wetland and, (2) subsurface flow wetlands. Both types of constructed wetlands consist of shallow beds or channels utilizing

the roots and rhizosphere of aquatic plants as the surface media for bacteriological activity. Free water surface wetlands also use the chemical uptake by the emergent vegetation and, sometimes floating vegetation (duckweed or water hyacinth) and zooplankters (daphnia) for treatment. Treatment of wastewater through constructed wetlands often achieves effluent of better than secondary treatment quality. Concerns over the use of constructed wetlands in the Lahontan Region include harsh climatic conditions (from excessive heat to excessive cold) which may significantly alter the plants' ability to grow, disposal/harvesting of plant material, and high operation and maintenance costs. At a minimum, constructed wetlands should be designed and constructed using guidelines contained in the USEPA's 1988 manual entitled "Constructed Wetlands and Aquatic Plant Systems for Municipal Wastewater Treatment." Some experimental wetlands are currently in use in the Lake Tahoe Basin for treatment of stormwater (see sections on Stormwater and Wetlands Policy). Wetlands are also being considered for treatment of acid mine drainage (see section on Mining). Data gathered from these experimental operations will provide useful information for future applications of constructed wetlands.

Package Treatment Plant Policy

Commercially available prefabricated treatment plants, known as package treatment plants, were originally designed to serve areas that could not be easily connected to an existing municipal sewage treatment plant. Such areas include the subdivisions constructed in the once remote areas surrounding the major desert communities in the southern portion of the Lahontan Basin and commercial establishments such as restaurants, motels, and RV parks. More recently, package plants have increased to a size that can serve small municipalities. Many plants employing biological treatment were installed with the idea that the plants would operate themselves and therefore, could be turned on and forgotten. However, to meet the current pollution discharge regulations, these plants require daily attention by a knowledgeable, conscientious and certified operator. Without proper maintenance and sludge disposal practices, waste discharges from these plants may cause unacceptable odor and nuisance conditions, and/or violate water quality objectives and waste discharge requirements.

The Regional Board encourages persons to connect new developments to community sewer systems in lieu of the installation and use of package treatment plants. If community sewer systems are not available, and the area and development are

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unsuitable for individual waste disposal systems because:

- 1) the density of the subdivision or commercial development is greater than allowable for individual waste disposal systems ~~(exceeds 2 single family equivalent dwelling units per acre or has a wastewater discharge volume greater than 500 gallons per day per acre)~~, **or**
- 2) the nitrate concentration of the underlying ground water equals or exceeds 10 mg/L as nitrogen, then

the Regional Board will likely approve the use of package plants for treating waste discharges from the development. In areas with condition No. 2 above, the effluent from the package treatment plants will be required to meet a limitation of 10 milligrams per liter nitrate-nitrogen.

Package Treatment Plant Criteria

- a. Design should be based on peak daily flow estimates. A flow equalization chamber at the headworks may be appropriate for some applications so as not to overload the treatment capacity of the plant.
- b. Measures to control odor and/or eliminate nearby odor receptors must be included in the design and proposal.
- c. Package plants must include adequate storage and/or treatment (digestion) area for waste sludge. Proposed sludge disposal measures must be included in the project plan.
- d. For commercial, institutional or industrial systems, pretreatment may be necessary if the chemical composition of the wastewater is significantly different from domestic wastewater.
- e. Package plants should contain duplicate equipment components for components subject to failure. If equipment is not on-site, the manufacturer should have the ability to provide replacement equipment to the operator so that a replacement component can be installed within forty-eight hours of failure.
- f. Package treatment plants which rely on soil absorption for treatment and/or disposal of any of the wastewater generated will be required to meet the criteria established for individual waste disposal systems (see "Individual Wastewater Treatment Systems" in this Chapter) applicable to soil absorption and ground water protection

(soils, depth to ground water, slope of disposal field).

- g. Effluent from package treatment plants must meet all current Regional Board criteria. In addition, to be used for reclamation purposes, it must meet all current regulations of the Regional Board and the Department of Health Services regarding reclamation of wastewater (see Wastewater Reclamation Policy, below).

Package Treatment Plant Responsible Entity

The package treatment plant should be owned or controlled by a public agency or a private entity with adequate financial and legal resources to assume responsibility for waste discharges. The owner is ultimately legally and administratively responsible for the performance of the treatment plant. The owner is also responsible for adding capacity and/or renovations to the treatment plant when needed, controlling sewer construction practices in the services area, keeping supplies at the plant, and supervising the operator. The operator of the plant shall be certified in the State of California with the appropriate classification for the specific treatment processes and effluent quality required of the plant. Additionally, the owner should provide for outside help for special problems which may arise in the operation of the package treatment plant. The outside help may be a consulting engineer, or an operator of a larger treatment plant in a nearby town. The owner shall notify the Regional Board of the designated person or persons qualified to handle special problems at the plant.

Package Treatment Plant Permitting

The Regional Board will consider the adoption of individual waste discharge requirements (WDRs) or general WDRs for all package treatment plants. WDRs will contain specific effluent limitations (see section on effluent limitations, above). WDRs will also include monitoring and reporting requirements. Monitoring of the effluent may include analyses for the following parameters: flow, biological and/or chemical oxygen demand (BOD/COD), total dissolved solids, suspended solids, total and fecal coliform bacteria, nitrate, total nitrogen, total phosphorus, methylene blue active substances (MBAS), and purgeable halocarbons and aromatics. Monitoring requirements ~~will~~ may also include monitoring of the receiving water, including the underlying ground water. ~~At a minimum, four monitoring wells will be required.~~

Wastewater Recycling

Parts of the Lahontan Region, like California in general, are experiencing an increasing water

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shortage. In the southern portions of the Lahontan Region, for instance, the Antelope Valley and the Mojave Ground Water Basins are possibly overdrafted due to increased pumping to meet the water demands of the growing Victor Valley, Lancaster and Palmdale areas. In light of this increasing statewide water shortage, development of water supply alternatives is important. For many uses, recycled wastewater is a viable alternative water supply and sales of recycled water can sometimes be used to offset the costs of treating wastewater. (The terms “recycled water” and “water recycling” are now used in the California Water Code in place of the formerly used terms “reclaimed water” and “water reclamation”.) Residential greywater use decreases residential water demand and is discussed below in “Individual Wastewater Treatment Systems.”

Recycled water has a wide variety of applications. The applications include agricultural irrigation, landscape irrigation (including highway landscape, parks and golf courses), impoundments for landscape, recreational and/or wildlife uses, wetland and wildlife enhancement, industrial processes (e.g., cooling water, process water, wash water, dust control), construction activities and ground water recharge.

Wastewater recycling is an important component of wastewater management in the Lahontan Region. As of 1994, a total of 17 wastewater recycling plants in the Lahontan Region accounted for 7% of all recycled water reuse in the State. In fact, the Los Angeles County Sanitation District No. 14 - Lancaster water recycling plant and the South Tahoe Public Utility District sewage treatment plant were among the top twelve major recycled water producers in the State. Other recycled water producers in the Region include the Susanville Consolidated Sanitary District, the Crestline Sanitation District, the Lake Arrowhead Community Services District, and the Ridgecrest/China Lake Naval Weapons Center wastewater treatment facility.

Recycled water in the Lahontan Region is used for golf course, alfalfa, tree and other agricultural irrigation, as well as for soil compaction and dust control. Some recycled water from the Lancaster Water Reclamation Plant is used for wildlife habitat enhancement at Piute Pond and to supply a recreational lake at Apollo Lake County Park. Other uses of recycled water, such as for snow making in areas of Lake Arrowhead and Mammoth Lakes, have been proposed to the Regional Board. (See Waste Discharge Prohibitions Section for Mojave River HU for exemption language concerning reclaimed wastewater.)

The State Board adopted the “Policy with Respect to Water Reclamation In California” and the related “Action Plan for Water Reclamation in California” in 1977 (State Board Resolution No. 77-1). This policy specifies actions to be implemented by the State and Regional Boards, as well as other agencies, in relation to reclaimed water use. The policy directs the State and Regional Boards to encourage reclamation and reuse of water, and to promote water reclamation projects which preserve, restore, or enhance instream beneficial uses. The policy also states that the State and Regional Boards recognize the need to protect public health and the environment in the implementation of reclamation projects.

The Porter-Cologne Act requires Regional Boards to consider the need to develop and use recycled water when establishing water quality objectives. The Porter-Cologne Act also requires the State Department of Health Services (DHS) to establish statewide recycling criteria for each type of recycled water use to protect public health. The Act requires any person proposing to discharge recycled water to file appropriate information related to the discharge with the Regional Board. The Act also states that, after consulting with and receiving recommendations from DHS, and after any necessary public hearing, the Regional Board shall, if necessary to protect the public health, safety or welfare, adopt water reclamation requirements for the recycled water discharge.

The California Water Code provides encouragement for the use of recycled water in relation to water rights decisions, as follows (Section 1010 [a][1]):

“The cessation of, or reduction in, the use of water under any existing right regardless of the basis of right, as the result of the use of recycled water, ... is deemed equivalent to and for purposes of maintaining any right shall be construed to constitute, a reasonable beneficial use of water to the extent and in the amount that the recycled ... water is being used not exceeding however, the amount of such reduction.”

The Porter-Cologne Act (Section 13522[b]) provides that the use of reclaimed water pursuant to uniform statewide reclamation criteria “does not cause, constitute, or contribute to, any form of contamination” unless the Department of Health Services or the Regional Board determines that contamination exists.

The Porter-Cologne Act (Sections 13523.1 and 13263[h]) allows Regional Boards to issue master reclamation or recycling permits for suppliers and/or distributors of reclaimed or recycled water. Master

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reclamation permits must include waste discharge requirements and requirements for the following: compliance with statewide reclamation criteria, establishment and enforcement by the permittee of rules or regulations for reclaimed water users, quarterly reporting on reclaimed water use, and periodic compliance inspections of water users by the permittee.

The California Water Code (Sections 13550 through 13556) declares that use of potable water for certain purposes (e.g., irrigation of parks, golf courses, cemeteries, and residential landscaping, and toilet and urinal flushing in nonresidential structures) is a waste and unreasonable use of water if nonpotable water is available, under specific conditions. Section 13555.2 declares the Legislature's intent to encourage the design and construction of distribution systems for nonpotable water separate from those for potable water. Section 13556 allows water suppliers to acquire, store, provide, sell and deliver recycled water for any beneficial use if the water use is in accordance with state water recycling criteria and with Chapter 7 of the Water Code.

While the Regional Board supports the concept of water recycling, it must also consider potential impacts from recycling on ground and surface water quality. When reviewing proposed water recycling projects, the Regional Board carefully considers potential public health impacts from pathogens or conservative organic compounds, as well as the potential of the proposed project to create pollution or nuisance conditions. The Board also considers potential impacts on the quality and beneficial uses of any receiving surface or ground waters including the potential for eutrophication of surface waters due to nutrient loading from recycled water. Discharges of recycled water are prohibited in areas of the Lahontan Region where waste discharge prohibitions are in place, unless exemption criteria, where applicable, can be met. The Water Code (Sections 13529.2 and 13529.4) includes provisions for reporting cleanup, and administrative civil liabilities for unauthorized discharges of recycled water which has been treated at secondary or tertiary levels.

Accumulation of minerals is a common potential impact to receiving waters from recycled water uses. Accumulation of minerals must be minimized to provide for protection of beneficial uses. A variety of techniques can be used. Where well controlled irrigation is practiced, nitrate problems can be controlled. Vegetative uptake will utilize soluble nitrates which would otherwise move into ground water under a percolation operation. Demineralization techniques or source control of total dissolved solids may be necessary in some areas

where ground waters have been or may be degraded. Presence of excessive salinity, boron, or sodium in the effluent could be a basis for rejection of proposals to irrigate cropland with effluent. However, the Porter-Cologne Act allows issuance of water recycling requirements to a project which **only** violates salinity objectives.

Water Recycling Control Measures for Indian Creek Watershed

Recycled water from the South Tahoe Public Utility District (STPUD) is exported from the Lake Tahoe Basin to Alpine County, where it is used for irrigation. In order to protect the beneficial uses of the Indian Creek watershed, the Regional Board must regulate the use of recycled water for irrigation in coordination with regulation of other discharges such as septic systems, irrigation return flows from lands not irrigated with effluent, and stormwater from pasture lands and manure storage areas. (High nutrient and coliform bacteria levels measured in Indian Creek and the lower West Fork Carson River indicate that better management of animal wastes is desirable in these watersheds.) The amount of nutrients leaching into ground waters from areas irrigated with domestic wastewater effluent should be minimized.

The Regional Board should maintain stringent waste discharge requirements for the irrigation of agricultural lands with STPUD's effluent, and extensive monitoring should be done to ensure that public health is adequately protected.

Waste discharge requirements for ranchers irrigating with effluent must specify control measures at least as strict as the following:

- Irrigation efficiency must be at least 50% in all effluent discharge areas. Higher efficiencies should be mandated for specific areas to the maximum practical extent, based on site limitations and the limitations of available technology.
- Application of effluent to agricultural lands must be prevented during the winter period when crops are not growing.
- Prohibition of discharge to surface waters of tailwaters from lands irrigated with effluent.
- Strict effluent limits for Total Coliform Organisms
- Provision for pre-discharge assessment of potential effluent disposal sites to determine the risks of ground water contamination.

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- Buffer areas to prevent effluent disposal too close to wells and spray disposal too close to dwellings and traveled ways.
- Ground and surface water monitoring to assess impacts of irrigation return flows.

Facilities Discussion

Regional Wastewater Treatment Facilities

Victor Valley Wastewater Reclamation Authority

In the past, local wastewater disposal systems in the Victor Valley area were adequate to serve its scattered development. However, in the 1970s the intensity of development reached the level where continued independent use of these systems and individual disposal units did not afford effective area wide control of wastewater. Based on long-range economic and water quality benefits to the immediate or downstream area, treatment and disposal facilities in the Victor Valley area needed consolidation. The disposal of wastewater necessitated a coordinated approach in the use of local ground, surface, and imported water to form an integral part of a water resources management program that provides for salinity control.

The Regional Board implemented control actions in the 1970s which resulted in the completion of a regional treatment plant in 1981, which is owned and operated by the Victor Valley Wastewater Reclamation Authority (VWRA).

The VWRA Treatment Plant, which is located approximately five miles north of the City of Victorville and approximately one mile northeast of George Air Force Base, collects, treats, and disposes of domestic wastewater.

The VWRA transports wastewater to the treatment plant by means of interceptor sewers from the City of Victorville, Spring Valley Lake (San Bernardino County Service Area No. 64), Apple Valley, Oro Grande (San Bernardino County Service Area No. 42), and Hesperia.

The VWRA project and Regional Board control actions were also instrumental in the construction of sewer systems for the Apple Valley Desert Knolls, Basin Plan prohibition area, Apple Valley Village and Bear Valley Road area, which are currently served by the VWRA treatment plant.

The original capacity of the VWRA treatment facility was 4.8 million gallons per day (mgd). VWRA has

subsequently expanded the plant to 9.5 mgd. The plant currently treats and discharges an average of 7.0 mgd to the Mojave River.

The VWRA treatment facility is designed to provide a level of treatment greater than standard secondary treatment for the discharge to the Mojave River and to provide standard secondary treatment for the discharge to percolation ponds. Treatment processes consist of screening, grit removal, primary sedimentation, flow equalization, biological treatment, using activated sludge, secondary sedimentation, secondary effluent percolation, coagulation, a combination of pressure and rapid sand filtration, and chlorination.

Tahoe-Truckee Sanitation Agency

The Tahoe-Truckee Sanitation Agency (TTSA) provides tertiary treatment for wastewater collected by the North Tahoe and Tahoe City Public Utility Districts in the Lake Tahoe Basin; and by the Alpine Springs and Squaw Valley County Water Districts, the Truckee Sanitary District, and Placer County Service Area 21 in the Truckee River watershed. Wastewater is carried from member districts by an interceptor pipeline which generally parallels the Truckee River. Export of domestic wastewater from the Lake Tahoe Basin is mandated by the Porter-Cologne Act. The high level of treatment provided by TTSA is necessary to protect instream beneficial uses of the Truckee River in California and municipal use of the River in the Reno-Sparks, Nevada area.

The TTSA plant has an approved capacity of 5.83 mgd (maximum 7-day average, 7.4 mgd) during the summer. It provides high levels of nitrogen and phosphorus removal. Effluent limitations for nutrients and other parameters are established in the waste discharge requirements adopted for the facility. Treated wastewater is discharged to subsurface disposal trenches in hydrologic continuity with the Truckee River and Martis Creek, or used for spray irrigation in the same general area. Because subsurface disposal has not provided the additional phosphorus removal initially expected, TTSA has increased its relative emphasis on spray irrigation.

Numerical water quality objectives for the Truckee River and Martis Creek were revised in 1980 with consideration of the TTSA discharge. Nitrate-nitrogen was considered the most critical constituent for the protection of beneficial uses. Nitrate objectives (see Chapter 3) were established for different stream reaches based on a flow-related wasteload allocation model. (TTSA's ability to meet the objectives depends partly upon river flows which are managed by a federal watermaster under a court decree. River operating agreements are discussed in Section 4.9 of

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this Chapter.) Objectives for stations downstream of the TTSA discharge allow for increased nitrate loading (over natural background levels) from TTSA, and also allow increased loading of total dissolved solids, chloride, and sulfate, which are byproducts of the TTSA treatment process. In adopting these objectives, the Regional Board recognized that increases in loading of byproduct chemicals are necessary tradeoffs for the high levels of nitrogen removal.

Although TTSA is capable of removing nitrogen to a level of 2 mg/L in the effluent, the Regional Board set the effluent limitation at 9 mg/L in recognition of economic constraints. TTSA agreed to increase its level of nitrogen removal in the future if necessary for protection of beneficial uses. TTSA's effluent limitations were established on the premise that little or no improvement in quality would occur through soil percolation; the Regional Board had received no evidence of reliable long-term soil treatment at that time. Subsequently, TTSA initiated studies to define the capability of the soil in the effluent travel path to remove certain waste constituents. If adequate soil removal capacity is demonstrated, TTSA treatment levels for certain constituents may be reduced, with significant reductions in operation and maintenance costs and in capital costs for facilities expansion. No allowance for soil treatment should be established unless it is supported by substantial evidence of reliable constituent removals for extended periods of time.

Waste discharge prohibitions which affect the Truckee River watershed, are set forth in the "Waste Discharge Prohibitions" section of this Chapter.

If the counties within the TTSA service area desire to accommodate growth beyond the growth predicted in the TTSA Facilities Expansion Environmental Impact Report (TTSA 1981), it is recommended that the total number of septic tank discharges in the Tahoe-Truckee area be decreased or kept at current levels. This can be accomplished by requiring sewerage of existing septic tank subdivisions and/or by limiting build-out of such subdivisions. Each single family dwelling septic tank discharge which is eliminated by sewerage will allow approximately two additional single family dwelling discharges to TTSA.

Community Systems

South Tahoe Public Utility District

The South Tahoe Public Utility District (STPUD) provides collection and treatment for municipal wastewater from the El Dorado County portion of the Lake Tahoe Basin. Wastewater is given advanced secondary treatment and pumped over Luther Pass

to Alpine County, where it is stored in Harvey Place Reservoir and used for pasture irrigation. (Export of wastewater from the Lake Tahoe Basin is mandated by the Porter-Cologne Act. An amendment to that Act allowed STPUD to submit a conceptual plan for the reuse of treated wastewater within the Tahoe Basin. However, any project involving reuse of reclaimed water in the Lake Tahoe Basin would still be required to comply with all water quality objectives and to protect beneficial uses.) STPUD's approved capacity is 7.7 mgd; its effluent limitations are established in the waste discharge requirements for the facility. The Regional Board maintains water recycling waste discharge requirements on ranchers who use the effluent for irrigation. Issues associated with the STPUD plant include treatment capacity; and continuing problems with spills within the Lake Tahoe Basin.

The Regional Board should continue to review progress toward the restoration of Indian Creek Reservoir, and may require additional measures if necessary to protect beneficial uses. During normal and heavy water years, the Regional Board should evaluate the potential for illegal overflows from the reservoir and should require STPUD to take action to prevent such overflows. STPUD's waste discharge requirements should continue to prohibit leakage from effluent storage and conveyance facilities, and the Regional Board should strictly enforce the Basin Plan requirement which states:

"All facilities used for collection, transport, treatment or disposal of waste shall be adequately protected against overflow, washout, and flooding from a 100-year flood."

As a condition of Alpine County's approval of Harvey Place Reservoir, storage capacity in the reservoir was reserved for possible future discharges of secondary effluent from development in Alpine County. (See separate section on Markleeville PUD.) A decision to use this capacity would trigger review by the Regional Board and modification of STPUD's waste discharge requirements.

Alpine County should continue to regulate the density of new septic systems within the area affected by the STPUD discharge through zoning regulations and the MOU implementing the Regional Board's region-wide septic system criteria. The County should also continue to enforce ordinances concerning septic system installation which implement the criteria in this plan. The County should give Regional Board staff the opportunity to review any new ordinances which could affect water quality.

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The Regional Board should continue to work with Alpine County, the Alpine Resource Conservation District, and affected landowners to remedy other nonpoint source problems which may contribute nutrients cumulatively with septic systems and irrigation with reclaimed wastewater to the waters of the East and West Fork Carson River HUs.

City of Adelanto Public Utility Authority

The City of Adelanto Public Utility Authority wastewater treatment facility receives domestic and commercial sewage from the community of Adelanto, including an industrial park and several prison complexes. The facility is designed to produce an advanced secondary level of wastewater treatment. Before September 15, 1998, the City conveyed its wastewater to the Victor Valley Wastewater Reclamation Authority's regional wastewater treatment facility for treatment and disposal.

The design capacity of the facility is 1.5 mgd. Currently the City treats and disposes an average of approximately 0.7 mgd of wastewater. Treatment processes are preliminary treatment, two lined extended aeration lagoons, two secondary clarifiers, filtration, and disinfection. Sludge from the secondary clarifiers is thickened, centrifuged and routinely trucked offsite for disposal. Treated effluent is discharged to percolation pond for disposal. The City plans to construct a regional septage receiving station at the facility. Future City plans include possible use of recycled wastewater from the wastewater treatment facility.

The Adelanto wastewater treatment facility is regulated by waste discharge requirements for the discharge of treated wastewater to percolation ponds. A requirement to implement an industrial pretreatment program is included.

Los Angeles County Sanitation District Number 14—Lancaster

The District treats municipal wastewater from the City of Lancaster, the surrounding unincorporated area, and part of the City of Palmdale. Historically, most of the wastewater received secondary treatment. Under a facilities plan adopted in 2004, the District will replace its existing facilities with new tertiary treatment/activated sludge facilities. Phased expansion of the treatment and disposal facilities is planned. The activated sludge facilities will be operated so as to maximize nitrification-denitrification. Tertiary effluent will be used for agriculture, municipal landscape watering, industrial purposes, and maintenance of the lakes in Apollo Lakes Regional Park and the Piute Ponds and associated wetlands located on Edwards Air Force Base property. During the winter, when

agricultural demand is low, effluent will be kept in storage reservoirs. New infrastructure for the distribution of recycled water is planned.

Los Angeles County Sanitation District No. 20—Palmdale

Los Angeles County Sanitation District (LACSD) No. 20 treats domestic wastewater from the incorporated City of Palmdale and the surrounding unincorporated area. Secondary wastewater treatment is provided by ferric chloride (FeCl_3) and polymer enhanced primary sedimentation tanks, anaerobic digesters, and oxidation ponds. Additional treatment is provided by oxidation pond aeration. Sludge from the anaerobic digesters is dried in drying beds and stockpiled on site. Stockpiled sludge is intermittently exported for use as fertilizer and soil conditioner at approved offsite locations. The current design capacity of the secondary treatment and disposal facility is 8.0 mgd. An average of 8.0 mgd is currently treated and used for reclamation. LACSD No. 20 is proposing new construction and modifications at the facility by 1995 which will result in an increase of design capacity to 15.0 mgd.

The effluent from the District's 30th and 40th Street East oxidation pond sites is conveyed by two gravity pipelines and a force main to the City of Los Angeles, Department of Airports (LADOA) Irrigation Site where effluent is discharged to land and a portion is used to surface irrigate pasture, fodder crops, pistachio trees and various other types of trees that will be harvested for firewood. The capacities of the gravity pipelines are 1.0 mgd and 3.1 mgd. The area of the irrigation site is 2,560 acres. This includes an increase of 1,800 acres adjacent to the adjacent to the existing 760 acres currently in use.

Eastern Sierra Community Service District

The Eastern Sierra Community Service District was formed in 1977 to provide wastewater treatment for Inyo County Service Area No. 1 (which surrounds the City of Bishop) and the Bishop Indian Reservation. This area consists of all lands west and north of the Bishop City limits (West Bishop, Indian Reservation, Lazy A, Meadow Farms and Dixon Lane). The entire district is served by a multiple collection system that ranges in size from 8" to 27". All homes and businesses within the district are currently connected to said system.

This facility has a design capacity of 0.85 mgd and is located adjacent to the City of Bishop wastewater plant. The facility currently treats and disposes an average of 0.64 mgd of wastewater. The Eastern Sierra Community Service District wastewater plant consists of a primary clarifier, an anaerobic sludge

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digester and an aerated facultative pond. The effluent is then discharged onto pasture land or into one of 3 evaporation/percolation ponds. Each pond has a surface area of 15 acres.

Barstow Wastewater Treatment Facility

The City of Barstow Wastewater Treatment Plant receives domestic and commercial wastewater from the communities of Barstow and Lenwood. The wastewater treatment plant also receives industrial wastewater from the Atchison, Topeka and Santa Fe Railway Company classification yard located in Barstow.

The design capacity of the Barstow Wastewater Treatment Plant is 4.5 mgd. Wastewater treatment processes at the plant include preliminary treatment, primary clarification, activated sludge and chlorination. The discharger has eight percolation ponds and two fodder crop irrigation (spray) sites to dispose of treated secondary effluent. One of the irrigation sites has an area of 72 acres and the other site has an area of 67 acres. The treatment plant, percolation ponds and 72-acre irrigation site are located along the southern edge of the Mojave River bed. The 67-acre site is located along the opposite edge of the river bed.

The discharger treats primary sludge from the primary clarifiers with a grit removal system, sludge thickener and centrifuge. The dewatered primary sludge is incinerated, and sludge wasted from the activated sludge process is treated by an aerobic digester and is then discharged to the sludge drying beds. The dried sludge is hauled to the fodder crop irrigation sites where it is used as a soil conditioner and fertilizer.

The Wastewater Treatment Facility is regulated by waste discharge requirements for disposal of treated wastewater to the percolation ponds and irrigation site. Currently the City is pursuing a long range plan for treatment and disposal of wastewater.

Bishop Wastewater Treatment Facility

The City of Bishop wastewater treatment plant receives domestic and commercial sewage from the community of Bishop. The Eastern Sierra Community Service District Sewage Treatment Plant serves local residents outside the City of Bishop.

The design capacity of the plant is approximate 1.6 mgd. Currently the City treats and disposes an average of approximately 0.6 mgd of domestic wastewater. Treatment processes are two primary clarifiers, one clay-lined aeration lagoon, and two clay-lined oxidation ponds. Sludge from the primary clarifiers is treated by two anaerobic digesters and

then discharged to two drying beds. Approximately once per year the sludge from the drying beds is spread on a pasture irrigation area owned by the Los Angeles Department of Water and Power. Treated effluent is discharged to percolation ponds or pasture irrigation land for disposal. Approximately 125 acres are irrigated for non-milking animals.

The Bishop Wastewater Treatment Facility is regulated by waste discharge requirements for the discharge of treated wastewater to percolation ponds and irrigation pasture and for the discharge of sludge to irrigation pasture.

Lake Arrowhead Community Services Dist.

Present sewered communities in the Lake Arrowhead area are served by an extensive collection system operated by the Lake Arrowhead Community Services District (LACSD). Wastewater is collected from the communities of Lake Arrowhead, Blue Jay and Twin Peaks, for treatment and disposal at the District's plants and effluent outfall system. Effluent exported from the San Bernardino Mountains via the outfall system is presently used to surface irrigated fodder crops at Lake Arrowhead Ranch in Hesperia. The LACSD treats an average of 1.5 mgd of domestic wastewater from the Lake Arrowhead area. Maximum wet weather flows of 8.5 mgd have occurred due to large amounts of inflow/infiltration. Wet weather flows have caused significant problems and the district is currently embarking on projects to reduce inflow/infiltration to the system. Flow during a holiday weekend may average as much as 3 mgd.

Wastewater treatment is provided by two treatment plants, the Willow Creek treatment plant and The Grass Valley treatment plant. The Willow Creek treatment plant provides secondary treatment and disinfection of wastewater by an aerated grit chamber, primary clarifiers, parallel contact-stabilization activated sludge/secondary clarifier units, chlorine contact tanks, and effluent equalization ponds. Sludge handling units include a gravity thickener, vacuum filter, sludge conveyer, incinerator, and an ash conveyer and storage system. The Grass Valley treatment plant provides secondary treatment and disinfection utilizing aerated grit chambers, primary clarifiers, high-rate plastic media trickling filters, secondary clarifiers, and chlorine contact tanks. An effluent equalization pond is also included. Sludge handling units include a gravity thickener and a belt filter press. Presently the sludge from the Willow Creek and Grass Valley plants is dewatered and disposed of at a sanitary landfill by burial.

Effluent from both treatment plants is discharged to a ten-mile outfall pipeline conveying the treated

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wastewater to a 300-acre site where it is used for spray irrigation of alfalfa (Lake Arrowhead Ranch). The irrigation site contains four percolation ponds which are used only when the effluent cannot be disposed of by irrigation.

Located approximately one-half mile northeast of the Willow Creek treatment plant are a series of hillside contour ponds which previously constituted the disposal site for the District. The ponds are not designated disposal sites, and any discharge to these ponds constitutes a violation of waste discharge requirements and applicable discharge prohibitions contained in this Basin Plan. Hillside ponds, however, have been used under emergency conditions.

Ridgecrest-China Lake Area

The City of Ridgecrest's Regional Domestic Wastewater Treatment Plant is located in the Indian Wells Valley one mile northeast of downtown Ridgecrest. The plant serves the City of Ridgecrest and the China Lake Naval Weapons Center. The City collects, treats, and disposes of an average of 3.3 mgd of domestic wastewater in the winter and 4.2 mgd in the summer. The additional wastewater flow that occurs in the summer is believed to be due to the discharge of evaporative cooler reject water to the sewer. The current capacity of the treatment plant is 4.4 mgd. The plant is owned and operated by the City of Ridgecrest. Wastewater treatment is provided by preliminary treatment, primary clarifiers, four (4) oxidation ponds, and chlorination facilities. Effluent from the City's oxidation ponds is chlorinated and used to spray irrigate the Naval Weapons Center golf course. Wastewater disposal is also accomplished by discharging primary or secondary effluent to the City's three (3) evaporation ponds and four (4) percolation ponds. A portion of effluent is also used to surface irrigate grasses and trees on 73 acres owned by the City. The oxidation ponds and evaporation ponds are reportedly lined with clay. Sludge from the City's primary clarifiers is treated by two (2) anaerobic digesters and discharged to drying beds. The dried sludge will be used as a fertilizer and soil conditioner for fodder crops (barley and alfalfa) or will be disposed of by burial at the Ridgecrest solid waste disposal site. Since 1987, Ridgecrest has been under a cease and desist order due the formation of a ground water mound in the area. Percolation from the City's treatment plant ponds has been the primary cause for the formation of a ground water mound in the area. The mound has caused two problems. The first problem is the ponding of wastewater on the ground surface adjacent to the designated disposal ponds. The second problem caused by the mounding is the threatened migration

of poor quality ground water toward domestic water supply wells located to the southwest. In response to the problem, Ridgecrest initiated the reclamation of wastewater to reduce percolation. Ridgecrest disinfects the reclaimed wastewater at the treatment plant by chlorine. The reclaimed wastewater is then pumped through approximately 3.5 miles of 6-inch diameter PVC pipe to four unlined ponds, comprising a total of ten acres, for storage. Thence the water is pumped for spray irrigation to 73 acres of pasture, including four acres of tree irrigation, adjacent to the old Ridgecrest sewage treatment pond and to 17 acres of golf course driving range. The China Lake Naval Weapons Center is also using the reclaimed wastewater to irrigate their golf course.

Silverwood Watershed Wastewater Treatment Plants

All developed areas in the Silverwood Watershed are served by the treatment and effluent outfall system operated by the Crestline Sanitation District. Wastewater is collected from Crestline, Lake Gregory, and Lake Silverwood areas in the San Bernardino Mountains. The integrated system is comprised of three regional secondary treatment facilities: Houston Creek, Seeley Creek, and Cleghorn, which are served by an export outfall system for effluent disposal at Las Flores Ranch below Silverwood Watershed. The Crestline Sanitation District treats an average of 0.5 mgd of domestic wastewater. Due to excessive collection system infiltration/inflow that occurs during wet weather, the combined flow to the Crestline Sanitation District's treatment facilities and outfall pipeline has reached a maximum of 3.0 mgd. Wet weather flows have caused significant problems and the District is currently embarking on projects to reduce inflow/infiltration to the collection system.

The Houston Creek Treatment Plant process includes primary sedimentation, grit chamber clarification, primary clarifier, trickling filter, secondary clarification, chlorination, sludge holding tank. The Cleghorn treatment plant process includes an aeration chamber, secondary sedimentation, and chlorination. Each of the three treatment plants discharges disinfected secondary effluent to an 11-mile outfall pipeline system, which conveys the treated wastewater from the Silverwood Lake watershed to a disposal site located below Silverwood Lake and adjacent to the West Fork of the Mojave River. Disinfected effluent from the outfall pipeline is disposed of by discharging to either percolation ponds or to pasture irrigation at Las Flores Ranch. Another plant also within the Silverwood Watershed is owned and operated by the U.S. Forest Service; it serves a campground. Treated

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effluent is discharged to Las Flores Ranch through the effluent outfall operated by the Crestline Sanitation District.

Susanville Consolidated Sanitary District

Domestic and municipal wastewater from the incorporated City of Susanville and some of the surrounding unincorporated area is treated by the District's secondary treatment facility. Wastewater receives secondary treatment consisting of screening, comminution, grit removal, extended aeration using oxidation ditches with rotor aerators, secondary clarification, and chlorination. Onsite unlined emergency storage ponds are available to store flows during power outages, system failures or plant maintenance periods. The plant has a septic tank dump station which accepts 6,000 gallons per month of septic material which is diluted, chlorinated and metered into the plant headworks. The plant provides aerated storage and centrifuge drying for wastewater sludge which is stored onsite for ultimate application onto agricultural lands. Treated wastewater is discharged to Jensen Slough, approximately one-half mile upstream from its confluence with the Susan River. During the growing season, water is diverted from Jensen Slough for irrigating nearby agricultural lands. The District's wastewater system is regulated under a NPDES permit which specifies effluent and receiving water limits and a pretreatment program. The permit also requires surface water monitoring.

Bridgeport Public Utility District

Wastewater from the community of Bridgeport (1990 population about 500) is treated by the District's stabilization pond system which consists of three unlined oxidation ponds and two percolation ponds. As of 1991, only one of the percolation ponds was used. The facility treats and disposes of up to 0.2 mgd of domestic wastewater and septage. Sludge has not yet been removed from this facility, which was constructed in 1968. Prior to 1990, the facility was not consistently meeting the maximum 30 mg/L BOD limitation (for secondary treatment) for wastewater available for percolation. A pollution study conducted in 1990 for the State Board (Toxic Technology, Inc. 1990) found indications of pond leakage and migration of wastewater constituents into ground water. However, no quantification could be made. As part of that study, ground water monitoring wells were installed. Waste discharge requirements revised in 1991 required additional treatment to meet secondary treatment standards and periodic ground water monitoring to evaluate the effects of the discharges.

Markleeville Public Utility District

Wastewater from the community of Markleeville is treated by the District's facility consisting of a mechanically aerated oxidation pond and two evaporation-percolation ponds. The system is designed to treat 0.04 mgd. All of the ponds are currently unlined and the subsurface flow migrates towards Markleeville Creek, located approximately 100 feet south of the ponds. There are numerous seeps at the toe of the slope below the ponds. It is unknown if the seeps are natural or are a result of the ponds. Regional Board staff is investigating potential impacts to water quality. Future increases in capacity may be handled by reserve capacity available in Harvey Place Reservoir which is currently used by South Tahoe Public Utility District (see Community Facility discussion for STPUD).

Other Small Community Systems

The Lahontan Basin has several small community wastewater treatment systems. These systems include eight oxidation pond systems located in Fort Bidwell, northern Eagle Lake (Stones-Bengard Sanitary Cooperative), southern Eagle Lake (USFS), Eagle Lake Ranger District, Leavitt Lake, Sierra Army Depot, Floriston, and the Woodfords Indian Community. Many other small communities and facilities discharge to community leachfield systems. Nine such facilities in the North Lahontan Basin are regulated by waste discharge requirements. In the South Lahontan Basin, there are many more small communities and individual industrial, commercial and recreational facilities that utilize separate wastewater treatment and disposal systems. Individual systems range from community leachfields to evaporation-percolation ponds to package activated sludge treatment plants. Approximately sixty-four such systems are regulated under waste discharge requirements.

Other potential small community systems considered in the 1975 North Lahontan Basin Plan include systems for Cedarville, Johnstonville/Janesville, Lake Forest Estates, Walker, and Twin Lakes. Other potential small community systems considered in the 1975 South Lahontan Basin Plan included systems for Randsburg, Johannesburg and Red Mountain, Little Rock, Pearblossom, Leona Valley, portions of the San Gabriel Mountains, Wrightwood, Hinkley, and Daggett. These systems have not been constructed. The need for community systems in these areas will be evaluated on a case-by-case basis if problems with current septic systems become apparent.

Individual Onsite Wastewater Treatment Systems (Septic Systems)

The State Water Board adopted a *Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy) on June 19, 2012. The OWTS Policy established a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS.

The OWTS Policy sets standards for onsite wastewater treatment systems (OWTS) that are constructed or replaced, that are subject to a major repair, that pool or discharge waste to the surface of the ground, and that have affected, or will affect, groundwater or surface water to a degree that makes it unfit for drinking water or other uses, or cause a health or other public nuisance condition. The OWTS Policy also includes minimum operating requirements for OWTS that may include siting, construction, and performance requirements; requirements for OWTS near certain waters listed as impaired under Section 303(d) of the Clean Water Act; requirements authorizing local agency implementation of the requirements; corrective action requirements; minimum monitoring requirements; exemption criteria; requirements for determining when an existing OWTS is subject to major repair, and a conditional waiver of waste discharge requirements.

The Regional Board incorporates the OWTS Policy into this Basin Plan (see Appendix B). Implementation of the OWTS Policy is overseen by the State Water Board and the Regional Board. Local agencies (e.g., county and city departments and independent districts) have the opportunity to implement local agency management programs (LAMPs) if approved by the Regional Board. In addition to the OWTS Policy, this Basin Plan includes waste discharge prohibitions in certain areas that are applicable to OWTS. Where an exemption is given to a waste discharge prohibition applicable to an OWTS, the OWTS must also comply with the OWTS Policy or an approved LAMP. The following principles and policies will be applied by the Regional Board in review

of water quality factors relating to land developments and waste disposal from individual waste disposal systems:

1. The following criteria will be applied as the minimum to ensure continued adequate protection of water quality, protection of present and future beneficial uses, and prevention of pollution, contamination and nuisance conditions. The Regional Board will prohibit the discharge from individual disposal systems which do not conform to these criteria.
2. These criteria prescribe minimum conditions for waste disposal from individual on-site systems and do not preclude the establishment of more stringent criteria by local agencies or the Regional Board. The Regional Board does not intend to preempt the authority of local agencies and will support local agencies to the fullest extent possible, particularly in the implementation of more stringent regulations.
3. Detailed procedures to implement these criteria and to process exemptions to these criteria are included in "Regional Board Guidelines for Implementation of Criteria for Individual Waste Disposal Systems" (see Appendix C).
4. The criteria contained herein are applicable to the entire Lahontan Region and pertain to any and all proposed building that involves wastewater discharges to other than a community sewer system. The criteria apply to: (1) proposed building on lots within new subdivisions or parcels, **and** (2) proposed building on existing subdivided lots or parcels, **and** (3) proposed subdivisions. The criteria do not apply to: (1) existing individual waste disposal systems, or (2) projects which have final building permits prior to June 16, 1988, unless evidence exists which necessitates retrofit of septic systems to conform with current criteria. The "Regional Board Guidelines for Implementation of Criteria for Individual Waste Disposal Systems" specifies separate exemption procedures for existing developments and for new developments. Existing development includes projects for which **final** development plans, such as a final tract map, were approved by local agencies **prior** to June 16, 1988. New development includes subdivisions or individual parcels which **do not** have final development plans approved by local agencies **prior** to June 16, 1988.

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- ~~5. These criteria do not apply to projects within septic system prohibition areas where the criteria are more stringent (for prohibitions, see Section 4.1 of this Chapter); and these criteria will preempt less stringent criteria in septic system prohibition areas.~~
- ~~6. Where community sewer systems are available, the Board will encourage connection to the sewer system in lieu of use of individual disposal systems.~~

Criteria for Individual Waste Disposal Systems

1. Maximum Density

~~Individual waste disposal systems associated with new developments which have a gross density greater than two (2) single family equivalent dwelling units per acre will be required to have secondary level treatment of wastewater. Equivalent dwelling units (EDUs) are defined as a unit of measure used for sizing a development based on the amount of waste generated from that development; the value used in implementation of these criteria is 250 gallons per day per EDU. For the purposes of these criteria, the discharge from a single family dwelling is equal to one EDU. Senior citizen dwelling units and second units as defined in Government Code Sections 65852.1 and 65852.2 will not be considered as additional dwelling units. In addition to residential developments, this secondary level treatment policy also applies to wastewater discharges from commercial, industrial, recreational and all other developments with wastewater discharge volumes exceeding two EDU per acre density (500/gal/day/acre based on 250 gal/day/EDU). Use of new septic systems is permitted in existing developments with lot sizes having a net area greater than or equal to 15,000 square feet. The net area is that contained within the boundaries as set forth in the legal lot description.~~

2. Minimum Distances

~~The Regional Board has established the minimum distances (see Table 4.4-1 entitled, "Minimum Distances For Siting Individual Waste Disposal Systems") necessary to provide protection to water quality and/or public health. Local hydrogeological conditions may necessitate greater separation of the sewage disposal system from a well or watercourse for protection of beneficial uses (e.g., drinking supply and water contact recreation).~~

3. Additional Minimum Criteria

- ~~a. The percolation rate in the disposal area shall not be slower than 60 minutes per inch if the discharge is to a leachfield or 30 minutes per inch if discharge is to a seepage pit. If percolation rates are faster than 5 minutes per inch, then the soil for a total thickness of five feet below the bottom of the leaching trench shall contain at least 15% of material passing the No. 200 U.S. Standard Sieve and less than one-fourth of the representative soil cross-section shall be occupied by stones larger than 6 inches in diameter. Where the percolation rates are faster than 5 minutes per inch and the above requirement is not met, the minimum distance to ground water between the bottom of the disposal facilities and the anticipated high ground water shall be 40 feet. (The percolation rates shall be determined in accordance with procedures prescribed by the appropriate local public health agency).~~
- ~~b. Clay, bedrock, other material impervious to the passage of water, or fractured bedrock, shall not be less than 5 feet below the bottom of the leaching trench or less than 10 feet below the bottom of the seepage pit. Impervious is defined for design purposes as a stratum with percolation times of greater than 120 minutes per inch.~~
- ~~c. Depth to anticipated high ground water below the bottom of the leaching trench shall not be less than 5 feet. Depth to anticipated high ground water below the bottom of the seepage pit shall not be less than 10 feet. Greater depths are required if native material does not provide adequate filtration.~~
- ~~d. Ground slope in the disposal area shall not be greater than 30 percent.~~
- ~~e. Minimum criteria specified above must be met within the area of the proposed system and within the 100% expansion area for the proposed system.~~

Exemptions to the Criteria for Individual Waste Disposal Systems

~~In certain locations and under special circumstances, the Board or its Executive Officer may waive individual criteria.~~

- ~~1. Waiver of one or more individual criteria may occur if:~~

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- a. ~~The area beneath the proposed septic system discharge has no significant amount of ground water having present or future beneficial uses; or~~
- b. ~~It can be proven that no pollution, nuisance or unreasonable degradation of either surface or ground waters will occur as a result of the proposed septic system density when considered individually or cumulatively with other discharges in the area; or~~
- c. ~~Construction of a community collection, treatment, and disposal system is imminent. Short-term, interim use of individual waste disposal systems may be allowed.~~

Implementation of Criteria for Individual Waste Disposal Systems

1. ~~The Regional Board and the local agencies have adopted, through Memoranda of Understanding, criteria which are compatible with or more stringent than these criteria.~~
2. ~~The Memoranda of Understanding include the procedures of the review and processing of applications for proposed discharge of wastewater from land developments which only discharge **domestic** waste, including single-family-unit residential, multi-unit residential, commercial, industrial and recreational developments. The Memoranda of Understanding include provisions for Regional Board review and processing of specific application (e.g., for industrial waste discharges).~~
3. ~~For those local agencies which have adopted these or more stringent criteria, land developments which only discharge **domestic** waste, including single-family-unit residential, multi-unit residential, commercial, industrial and recreational developments, will be permitted entirely by the local agency. (However, the Regional Board reserves the authority to take action, if necessary, as described in item 6 below.)~~
4. ~~Whenever the proposed development will not meet the minimum criteria and no Memorandum of Understanding or other equivalent document exists between the Regional Board and the local agency, applications for all projects shall be transmitted to the Regional Board along with a complete report of waste discharge and a filing fee.~~
5. ~~The Regional Board will review, on a project-by-project basis, proposals for commercial,~~

~~industrial, recreational and all other types of developments which discharge **industrial** waste. If required, the report of waste discharge will contain information on estimated wastewater flows, types of wastes, and occupancy rates which will enable the Regional Board to evaluate the discharge in terms of EDUs.~~

6. ~~In any case, the Regional Board will prohibit the discharge of wastes from land developments which will result in violation of water quality objectives, will impair present or future beneficial uses of water, or will cause pollution, nuisance, or contamination, or will unreasonably degrade quality of any waters of the State.~~

Implementation for Other Types of Waste Disposal from Land Developments

1. ~~Severe impact on water quality can result from failure to implement adequate measures to control storm drainage and erosion. Land developers must provide plans for the control of such runoff from initial construction up to the complete build-out of the development. (See "Land Development" section.)~~
2. ~~The disposal of solid waste can have adverse impacts on water quality and public health. Land developers must submit a plan which conforms to the regional or county master plan and contains adequate provisions for solid waste disposal for complete build-out of the development.~~
3. ~~The disposal of septic tank sludge is an important part of any area-wide master plan for waste disposal. Land developers must submit a plan which conforms to the regional or county master plan and contains adequate provisions for septic tank sludge disposal for complete build-out of the development.~~
4. ~~The responsibility for the timely submittal of information necessary for the Board to determine compliance with these guidelines rests with persons submitting proposals for development or discharge. The Porter-Cologne Water Quality Control Act provides that no person shall initiate discharges of waste prior to filing a report of waste discharge and prior to (1) issuance of waste discharge requirements, (2) the expiration of 120 days after submittal of an adequate report of waste discharge, or (3) the issuance of a waiver by the Regional Board.~~

Alternative Individual Waste Disposal Systems

~~In areas where conditions do not support the use of conventional individual subsurface waste disposal~~

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systems (e.g., septic systems), the use of engineered alternative systems can be considered. Alternative waste disposal systems include, but are not limited to, mound systems, evapotranspiration beds, sand filters (intermittent and/or recirculating), and lined evaporation ponds. The Regional Board supports the use of engineered alternative systems for waste disposal as a remedy for otherwise unsuitable existing lots. However, the Regional Board discourages the use of engineered alternative systems for new construction, lots, or subdivisions.

Several factors the Local Health Officer and/or the Regional Board staff will consider when evaluating a proposal for the use of an alternative system include, but are not limited to:

1. **size of parcel**
2. **density of surrounding development**
3. **depth to ground water and bedrock**
4. **depth of soils** suitable for waste disposal as classified under the USDA classification system
5. **climate**
6. **access**
 - (a) for maintenance and pumping year-round
 - (b) control to prevent public contact
7. **emergency contingency plans** (including plans for expansion, replacement or repair)
8. **operation and maintenance requirements**
9. **distance to sewer**

Criteria for Alternative Systems

1. The conditions (soils, ground water, slope) which limit the use of conventional septic tank systems may also apply to alternative systems which rely on soil absorption for treatment and/or disposal of all or most of the wastewater generated (see Criteria for Individual Waste Disposal Systems).
2. **Mound Systems.** Mound systems shall be installed in accordance with criteria established in the State Board's *Guidelines for Mound Systems* (1980) or other criteria acceptable to the Executive Officer in conformance with standard engineering practices.
3. **Evapotranspiration Systems.** Evapotranspiration systems shall be installed in accordance with criteria contained in the State Board's *Guidelines for Evapotranspiration Systems* (1980) or other criteria acceptable to the Executive Officer in conformance with standard engineering practices.
4. **Sand Filters.** Sand filters shall be installed in accordance with the specifications for sand filters in the State of Oregon, Department of Environmental Quality's *On-site Sewage*

Disposal Rules (July 1, 1991) or other criteria acceptable to the Executive Officer in conformance with standard engineering practices.

5. **Grey Water Systems.** Under certain circumstances, grey water systems may be an acceptable method of disposal in conjunction with a composting toilet or holding tank to handle black water. Examples of appropriate applications include recreational areas such as campgrounds, day use facilities, and trailheads. Grey water systems shall be installed in accordance with the California Plumbing Code (24 Cal. Code of Regs., Part 5) and the local administrative authority. If properly constructed and operated, grey water systems are not expected to create a nuisance or pollution.
6. Other proposals for alternative systems shall be evaluated jointly by the local regulatory agency and Regional Board staff on a case-by-case basis. Some engineered systems may be considered experimental by the Regional Board. Experimental systems will be handled with caution. A trial period of at least one year should be established whereby proper system operation must be demonstrated. Under such an approach, experimental systems are granted a one-year conditional approval.
7. All proposals for alternative systems shall be designed by a Civil Engineer, Engineering Geologist or Sanitarian licensed to practice in California.

Maintenance Requirements

System designers should be responsible for developing specifications and procedures for proper system operation. Designers should provide to system owners an informational operation and maintenance document that includes: (1) clear and concise procedures for operation and maintenance, and (2) instructions for repair and/or replacement of critical items within forty-eight hours following failure. Engineered systems should be inspected by a licensed Civil Engineer, Engineering Geologist or Sanitarian during installation to insure conformance with approved plans.

Permitting Authority

The County Health Officer may approve alternative systems when **all** of the following conditions are met:

1. The Health Officer has found the system to be in compliance with criteria approved by the Regional Board Executive Officer (see Criteria

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~~for Individual Waste Disposal Systems and Criteria for Alternative Systems above); **and**~~

~~2. The Health Officer has either: (1) informed the Regional Board Executive Officer of the proposal to use the alternative system and the Executive Officer agrees that it complies with the finding in (a) above; or (2) a written agreement that the Executive Officer has delegated approval authority to the County Health Officer; **and**~~

~~3. A public or private entity has agreed in writing to assume responsibility for the inspection, monitoring, maintenance, and eventual decommissioning/reclamation of the system.~~

~~If all of the above conditions cannot be met, the Regional Board will consider issuing waste discharge requirements for alternative systems.~~

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Table 4.4-1

MINIMUM DISTANCES FOR SITING WASTE DISPOSAL SYSTEMS (in feet)

Facility	Domestic Well	Public Well	Perennial Stream ¹	Drainage Course or Ephemeral Stream ²
Septic tank or sewer line	50	50	50	25
Leaching field	100	100	100	50
Seepage pit	150	150	100	50
continued...				
Facility	Fill Bank ³	Cut or Property Line ⁴	Lake or Reservoir ⁵	
Septic tank or sewer pit	10	25	50	
Leaching field	4h	50	200	
Seepage pit	4h ⁶	75	200	

¹ _____ As measured from the line which defines the limit of a 100-year-frequency flood.

² _____ As measured from the edge of the channel.

³ _____ Distance in feet equals four times the vertical height of the cut or fill bank. Distance is measured from the top edge of the bank.

⁴ _____ Distance in feet from property line of any neighboring lot on which individual well(s) are used. (Distances are to property lines of neighboring lots, i.e., not street easements)

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⁵ ~~As measured from the high water line. (Regional Board Resolution No. 82-6 defines the high water line for Eagle Lake, Eagle Drainage Hydrologic Area as 5117.5 feet, a definition used in prohibiting the discharge of wastes from subsurface disposal systems on a lot with an elevation of less than 5130 feet. See Section 4.1 of this Basin Plan for waste discharge prohibitions for Eagle Lake.)~~

⁶ ~~As measured from the high seepage level.~~